4-4-Congruence and Transformations – Homework Solutions

1) JHK and QRS are congruent – rotation; LMNP and EDGF are congruent – translation;

2) 180° rotation

3) a. congruent; translation b. yes; rotation c. yes; translation

4) a. triangle A"B"C" b. lines *k* and *m* c. 5.4 inches d. yes

5) 30°

6) reflection in the x-axis, and translation 5 units right

7) a. 42° b. 90°

8) a. never b. always c. sometimes d. sometimes

9) 180° rotation

10) Yes, order matters

11)

Statements	Reasons
A reflection in line *l* maps $\overline{JK}$ to $\overline{J'K'}$, a reflection in line *m* maps $\overline{J'K'}$ to $\overline{J''K''}$, and $l \parallel m$	Given
If $\overline{KK''}$ intersects line *l* at *L* and line *m* at *M*, then *L* is the perpendicular bisector of $\overline{KK'}$ and *M* is the perpendicular bisector of $\overline{K'K''}$	Property of reflections
$\overline{KK'}$ is perpendicular to *l* and *m*, and KL = LK' and K'M = MK"	Definition of perpendicular bisector
Let *d* be the distance between *L* and *M*	
LM = LK' + K'M and KK" = KL + LK' + K'M + MK"	Segment Addition Postulate
KK" = LK' + LK' + K'M + K'M	Substitution
KK'' = 2(LK' + K'M)	Distribution
KK" = 2(LM)	Substitution
KK" = 2*d*	Transitive Property